In another alternative implementation where the interleaver if provided does not provide data repetition, the function of logic **46'** may be incorporated within the microprocessor. In this implementation the long code sequence is output from long code generator **30'** to the microprocessor where the power control group time slots for which the data is to be transmitted are determined. The microprocessor may control the output of data therefrom for the determined power control group. In the alternative the microprocessor may provide the normal output therefrom to the interleaver while controlling the output from the interleaver to place the data in the appropriate power control group time slot. As before the microprocessor may also have control over the power amplifier **208** for power savings, and filters **202** may or may not be provided.

As mentioned previously, other techniques may be used to distribute the data transmission energy throughout the frame. In one alternative technique the data is repeated throughout the frame in a manner discussed above. Rather than positioning the data in the frame by deleting all but one version of the original data or repeated data in the frame, the entire frame may be transmitted at a reduced energy level dependent upon the data repetition for the frame.

Referring back to FIG. **1**, microprocessor **18** provides the rate indication to filters **42** and **44** via the signal line indicated in dashed lines. Microprocessor **18** also provides each frame of data for encoding, interleaving and spreading as discussed above. Filters **42** and **44** are responsive to the rate indication for scaling the filter coefficients.

In FIG. **17**, a modified version of the interconnect logic circuits **170** of FIG. **14** is illustrated which generates the scaled coefficient values h(n) for the various frame data rates. Interconnect logic $\mathbf{170}_{xx}'$ generates four 10-bit coefficient values h(n), $h(n)/\sqrt{2}$, h(n)/2 and $h(n)/2\sqrt{2}$. Each of the four coefficient values are provided as an input to multiplexer $\mathbf{171}_{xx}'$. Also provided to multiplexer $\mathbf{171}_{xx}'$ are the rate indications bits V_1 and V_0. The values of bit V_1 and V_0 for the various rates are in accordance with Table IV. For a full rate frame, multiplexer $\mathbf{171}_{xx}'$ provides as an output the 10-bit coefficient value h(n). Similarly for hall quarter and eighth rate frames, multiplexer $\mathbf{171}_{xx}'$ respectively provides as an output the 10-bit coefficient values $h(n)/\sqrt{2}$, h(n)/2 and $h(n)/2\sqrt{2}$.

As disclosed in the above mentioned copending parent application in base station to mobile station communications the data is repeated throughout the frame in a manner similar to that discussed above. Although the modulation is slightly different, i.e. data intended for a each particular mobile station is encoded with a particular Walsh spreading code rather than symbol groups as in the mobile station transmission, the data is still convolutionally encoded, block interleaved, user PN scrambled and I and Q channel PN spread in a manner similar to the mobile station. The base station is also configured with a separate channel for communicating with a respective mobile station and also has separate control channels. However the the basic teaching of the above techniques are applicable to either base station or mobile station communications.

The previous description of the preferred embodiments is provided to enable any person skilled in the art to make or use the present invention. The various modifications to these embodiments will be readily apparent to those skilled in the art, and the generic principles defined herein may be applied to other embodiments without the use of the inventive faculty. Thus, the present invention is not intended to be limited to the embodiments shown herein but is to be accorded the widest scope consistent with the principles and novel features disclosed herein.

We claim:

1. A spread spectrum modulator for modulating variable rate digital data generated in data frames of a predetermined time duration with each frame of data having a number of data bits which is a predetermined multiple of data bits in a frame of a least number of data bits, comprising:

encoder means for receiving and convolutionally encoding a frame of variable rate digital data, and generating a frame of symbol data with said symbol data in a first ordered sequence;

interleaver means for reordering said symbol data in said frame and generating said frame of symbol data in a second ordered sequence, and if said frame of symbol data corresponds to a frame of variable rate digital data having a number of data bits less than a frame maximum of data bits said interleaver means generating said symbol data and a predetermined number of repeats of said symbol data in said frame of symbol data in said second ordered sequence to generate a predetermined frame maximum number of symbols in said frame of sequence symbol data in said second ordered sequence;

symbol encoder means for determining from a value of each one of consecutive portions of said frame of symbol data in said second ordered sequence an modulation symbol of a set of modulation symbols, and generating an output frame of function data;

first spreading means for generating a first pseudorandom noise (PN) code;

first combining means for combining said frame of modulation symbol data and said first PN code, and generating an output frame of first PN spread data;

randomizer logic means responsive to said first PN code and an indication of a data rate of said frame variable rate digital data for generating a mask signal; and

filter means for responsive to said mask signal for filtering out portions of said first PN spread data in said frame of first PN spread data.

2. The modulator of claim **1** further comprising:

second and third spreading means for respectively generating second and third PN codes;

second combining means for receiving and combining said second PN code with said frame of first PN spread data for generating a frame of second PN spread data;

third combining means for combining said third PN code with said frame of first PN spread data and generating a frame of third PN spread data; and

wherein said filter means comprises first and second finite impulse response (FIR) filter means for respectively digitally filtering out portions of said frames of second and third PN spread data.

3. The modulator of claim **2** wherein said first PN code is of a first code length and said second and third PN codes are of a second code length, with said first code length being substantially greater in length than said second code length.

4. The modulator of claim **1** wherein said symbols are Walsh functions.

5. The modulator of claim **4** wherein said encoder means is a convolutional encoder.

6. The modulator of claim **5** wherein said symbol encoder means comprises a 64-ary Walsh function encoder.

7. The modulator of claim **1** wherein said randomizer logic means is further for generating an additional mask signal for controlling a power amplifier.

8. A spread spectrum transmitter for modulation and transmission of a data packet of a variable number of bits in a data frame of a predetermined data capacity, comprising: